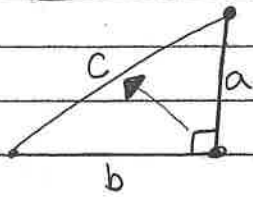


Pythagorean Theorem

It's a tool used for **RIGHT** triangles only.
A triangle can be identified as being a right triangle by using Pythagorean Theorem.

It can be used when **TWO** lengths of the triangle are known and **ONE** length is unknown.



a and b are referred to as the legs of the triangle.

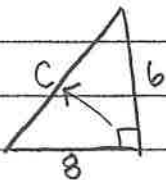
c is referred to as the hypotenuse.

It is the side that is across from the right angle.

The hypotenuse is always the longest side.

Steps for Using Pythagorean Theorem

- 1) Write what you know formula + variables
- 2) Substitute in the appropriate values into the formula
- 3) Solve for your unknown
- 4) Don't forget your units or rounding



$$a^2 + b^2 = c^2$$

$$6^2 + 8^2 = c^2$$

$$36 + 64 = c^2$$

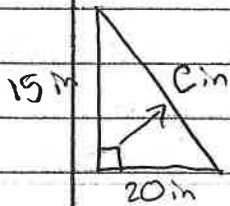
$$100 = c^2$$

$$\sqrt{100} = \sqrt{c^2}$$

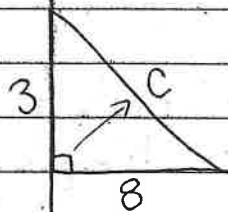
$$10 = c$$

$$10 = c$$

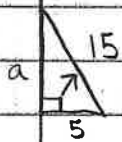
Practice Pythagorean Theorem



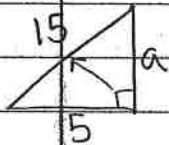
$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 15^2 + 20^2 &= c^2 \\
 225 + 400 &= c^2 \\
 625 &= c^2 \\
 \sqrt{625} &= \sqrt{c^2} \\
 25 \text{ inchs} &= c
 \end{aligned}$$



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 3^2 + 8^2 &= c^2 \\
 3 \cdot 3 + 8 \cdot 8 &= c^2 \\
 9 + 64 &= c^2 \\
 73 &= c^2 \\
 \sqrt{73} &= \sqrt{c^2} \\
 8.5 &= c
 \end{aligned}$$



$$\begin{aligned}
 a^2 + 5^2 &= 15^2 \\
 a^2 + 5 \cdot 5 &= 15 \cdot 15 \\
 a^2 + 25 &= 225 \\
 -25 \quad -25 & \\
 a^2 + 0 &= 200
 \end{aligned}$$



$$\begin{aligned}
 a^2 + 0 &= 200 \\
 \sqrt{a^2} &= \sqrt{200} \\
 a &= 14.1
 \end{aligned}$$